Office de la Propriété Intellectuelle du Canada
Un organisme d'Industrie Canada

Canadian Intellectual Property Office
An agency of Industry Canada

CA 2393708 A1 2004/01/16

(21) 2 393 708

(12) DEMANDE DE BREVET CANADIEN
CANADIAN PATENT APPLICATION

(13) A1

(22) Date de dépôt/Filing Date: 2002/07/16

(41) Mise à la disp. pub./Open to Public Insp.: 2004/01/16

(51) Cl.Int.^{7}/Int.Cl.^{7} G06T 3/40, G06F 3/14

(71) Demandeur/Applicant:
IDELIX SOFTWARE INC., CA

(72) Inventeurs/Inventors:
JETHA, ZEENAT, CA;
CARLISLE, ANDREW, CA;
SKIERS, ANDREW, CA;
BAAR, DAVID, CA

(74) Agent: OGILVY RENAULT

(54) Titre : APPLICATIONS DE LENTILLES MULTIPLES DANS DES PRESENTATIONS DE DONNEES A DETAILS EN CONTEXTE

(54) Title: APPLICATIONS OF MULTIPLE LENSES IN DETAIL-IN-CONTEXT DATA PRESENTATIONS

Applications of Multiple Lenses in Detail-In-Context Data Presentations

Background

The option of multiple lenses in detail in context data presentations until now has mostly been used to compare two areas of interest at the same time. Folding enhances this comparison by allowing the user to pull the areas of interest closer together. However, the use of multiple lenses may be used in more powerful ways. The ideas below describe applications conducive to multiple lenses.

Description of cropping with multiple lens

One of the most common, yet troublesome, tasks is to precisely crop areas of interest. Generally the user needs to pinpoint at least two points to define a rectangle (top left and bottom right), or more points to define an arbitrary polygonal shape. Zooming into the image prevents other important points from being visible. However, by using multiple lenses, this task becomes trivial. This section describes the process of cropping with multiple lenses.

Details

Imagine having to crop the image below with pixel precision from the top corner of the states to the bottom corner of Florida. Using the multiple lens idea, the user may first define two lenses. The lenses are position at the top left and bottom right corners of the rectangle that will later be used to define the cropping area. The detail in the focus of the lenses are magnified to pixel quality resolution making it easy to see exactly where the boarder meets the land in the top left lens and tip of Florida in the bottom right lens. Figure 1 shows these two lenses in place.

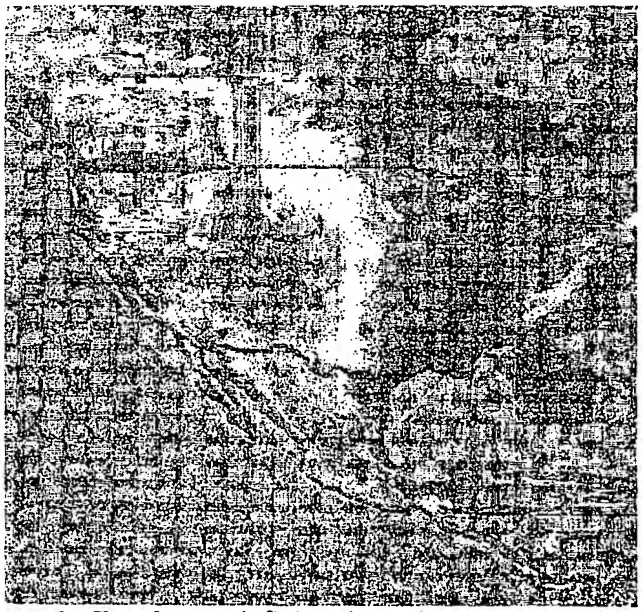

Figure 1. Two lenses defining the endpoints of a rectangle.

Once the lenses are in place, the user may use an existing tool to crop the image. In Figure 2, the user has defined a cropping area with a rectangle. The rectangle, defining the cropping area, may also be displaced by the lens, however, in this example, this is not the case.

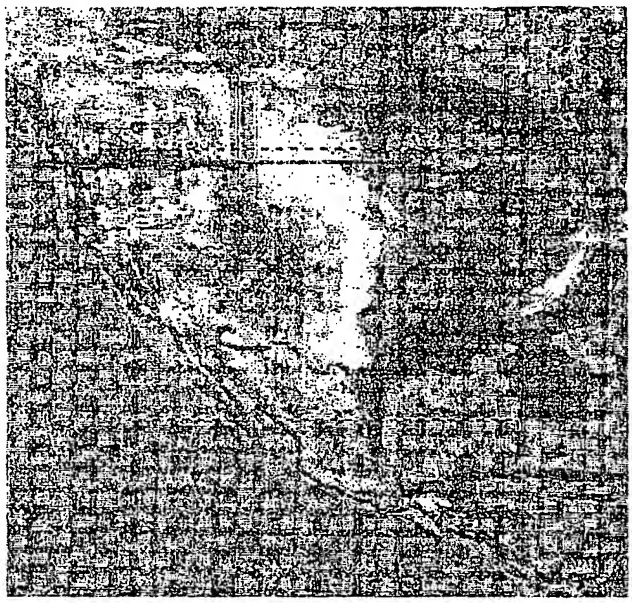

Figure 2. Cropping an area at pixel level through two lenses.

Variations

1. Multiple lenses may be defined for a polygonal shaped cropping. The cropping line may pass through each lens.
2. In the example above, two lenses were added to the scene before the crop rectangle was defined. However, the lens itself could become a cropping tool. That is, the user may first add a lens or move a preexisting lens into place (say the top left corner). Now, the cropping rectangle tool may be selected. As the bottom right corner of the crop rectangle moves to its next position, a new lens appears and moves with it.
3. In variation 2, the cropping shape is a rectangle; so only two lenses are required. However, the crop may be a polygonal shape. The end point of the crop line is attached to a lens. As the endpoint moves, the lens moves, too. Every time the user defines an endpoint of a line segment, a new lens may be added.
4. Once a cropping rectangle or polygon has been selected, a lens may use the cropping polygon as a guide path such that the lens can be moved continuously along the path by the user for inspection of the entire polygon perimeter, not just the ends of the line segments.

Description of measuring with multiple lens

Measuring distances between points may be achieved with better accuracy through a lens. The user may first add a number of lenses which each show high resolution data in the focus of the lens.

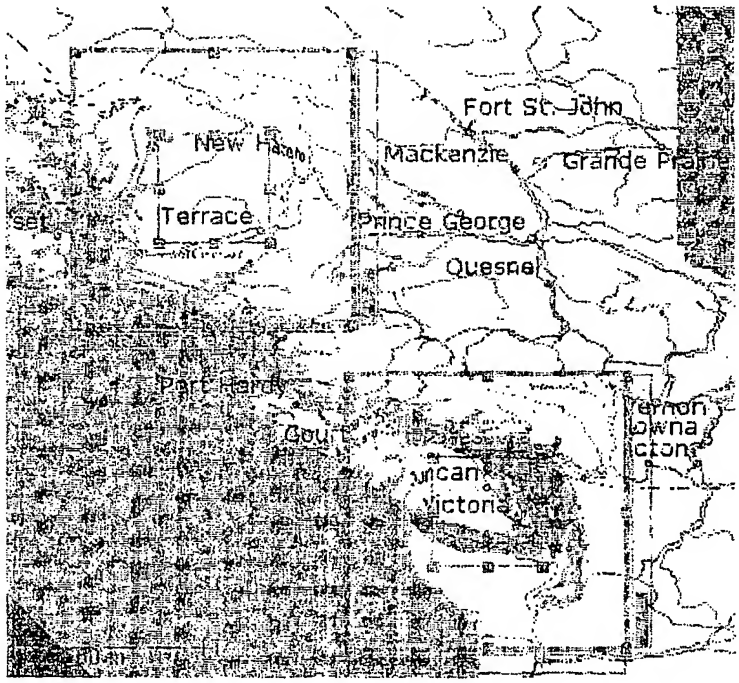

Figure 3. Place lenses in locations of interest.

Next a measurement tool may selected to determine the distance between the towns, or locations of interest. Since the region in the focus of the lens contains an image at a higher resolution, the measurement taken is more accurate.

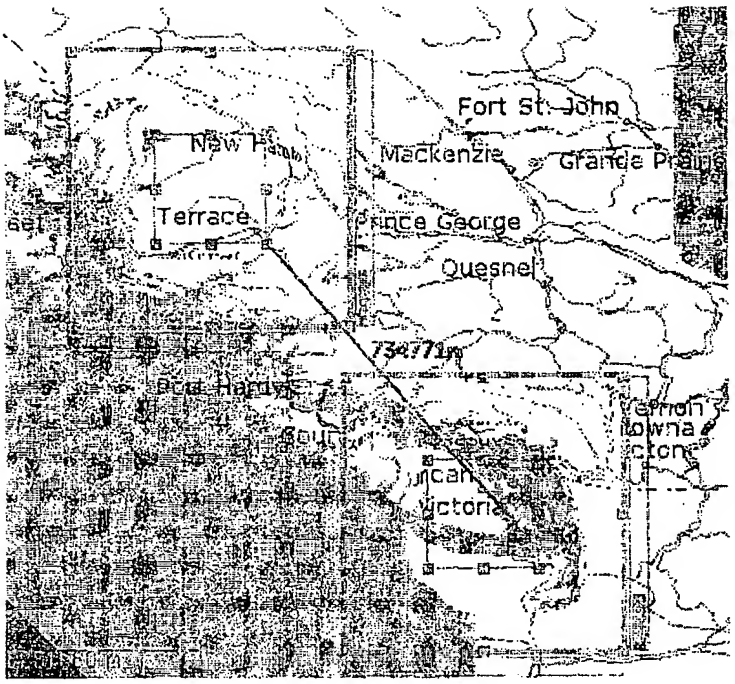

Figure 4. Take measure through lens.

Variations

The lens may be used in conjunction with the measure tool. The starting point of the measure tool may be associated with a lens. The end point of the measure tool may also be attached to the center of the lens. As the endpoint moves, the lens moves with it. At the end of every intermediate line segment, a new lens may be added to the scene.